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## Program support of thinking activity development of primary schoolchildren with cerebral palsy

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### Abstract

Thinking activity of primary schoolchildren with cerebral palsy is characterized by unsteady development of motivational, operational and regulatory components, and also by disproportional formation of thinking operations. Introduction of new education content standards for primary schoolchildren with disabilities requires the development of differentiated, individually guided programs. The content of programs is aimed at the formation of life competences significant for the socialization of children with ICP.

**Keywords:** special psychology, cerebral palsy, children with disabilities, thinking activity

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## **1. Introduction**

At present infantile cerebral palsy (ICP) is regarded as a disease caused by brain lesion in the perinatal period or in the period of incomplete process of basic structure development that determines a combined structure of neurological and mental disorders. In Oxford dictionary (2012) cerebral palsy is defined as a condition marked by impaired muscle coordination (spastic paralysis) and/or other disabilities, typically caused by damage to the brain before or at birth. Slow rate of mental development, unsteady disproportional character of mental functions formation are observed in case of this diagnosis. Peculiarities of psychophysical development intrinsic to children with ICP have a negative impact on the development and formation of thinking activity.

For a long time children with ICP got just medical help in Russia, and only since the middle of the XX-th century special pedagogues and psychologists paid attention to the specificity of cognitive and speech development of children with cerebral palsy. Though there is enough data about children with cerebral palsy, we have not found works concerning the issue of thinking activity development of primary schoolchildren with ICP as its active subjects. Taking into consideration that one of the main goals of the special education system at present is learners' rather active and independent thinking activity development we have determined the above stated problem as the urgent one. Thinking activity is regarded as a life significant competence child's personal development dynamics and his adaptive abilities for socialization depend on.

## **2. Thinking activity peculiarities of primary schoolchildren with cerebral palsy.**

In researches of Semenova (1991), Kalizhnyuk (1987) and Mastukova (1985, 1997) it is specified that there is no interrelation between the degree of motor and psychic disturbances expressiveness. So, severe motor disturbance can be combined with a light mental retardation, and the minimum motor disturbance - with expressed underdevelopment of intelligence. Absence of practical activities, passive life-organization pattern of children with cerebral palsy promote the development of one-sided orientation of interests, prevalence of verbal thinking over practical. But dominant verbal functions have no significant impact on the general development of intelligence. Fairly well developed verbal functions of growing children with cerebral palsy remain isolated from other mental functions and have no impact on their development as it happens to their healthy contemporaries (Levchenko, 2001).

Speaking about thinking activity of children with cerebral palsy, it should be noted that the basis of its development is the inferior sense of reality reflection and delay of speech development. Some researchers note the inertness, insufficient sequence and focus of thinking activity operations; insufficiency of visual-active and lag in formation of conceptual thinking of children with cerebral palsy.

The research conducted by us in 2010-2011 allowed revealing and analyzing typical characteristics of primary school children with ICP thinking activity according to its main components. So, children with ICP in a combination with developmental retardation have considerable difficulties in operational and regulatory components. It is difficult for children to concentrate independently on a task, to single out its conditions, to plan actions and to follow instructions, to see mistakes, to estimate adequately the received result. Children with ICP and normal rate of mental development display the decrease in indicators of motivational and operational components to a greater degree. The detected quality characteristics revealed the disproportion of thinking activity main components formation.

With further analysis we identified characteristic features of thinking activity of children with cerebral palsy of varying severity of the motor sphere with or without developmental delay. So, the general immaturity of thinking activity prevails in children with right-sided hemiparesis and spastic diplegia in case of developmental delay (Tvardovskiy, 2010). These children cannot analyze conditions of intellectual tasks purposefully, they cannot define essential elements in the task, correlate them with each other. There is immaturity of motivation and orientation activity that is especially brightly shown when tasks become more complicated. The

disintegration of thinking act in the process of problem solving is observed due to the poverty and **unsystematic** knowledge and ideas about the surrounding world. Some children cannot start acting independently though they understand the statement of the task. When stimulating and organizing assistance is available, the child can cope with the task. The main obstruction for children with right-sided hemiparesis and spastic diplegia, complicated by developmental delay, to perform integrative thinking activity, is the impossibility to plan activity as a sequence of definite intellectual actions, i.e. there is no self-regulation of thinking activity.

Another characteristic of thinking activity peculiarities is noted in case of hyperkinetic form, left-sided hemiparesis and spastic diplegia of uncomplicated developmental delay. The leading disturbance in their thinking activity is the immaturity of some operations (analysis, synthesis, abstraction, generalization, comparison) while the general plan of activity is carried out by the child, i.e. the disorder of an operational component of thinking activity prevails. Children attentively listen to a task statement, purposefully and actively start acting, but they do not cope with the task because of expressed hyperkineses, absence of generalization operation formation, low level of speech development, and also disorders of sense-perceptual sphere.

### **3. The content of thinking activity development program for learners with cerebral palsy**

Despite the considerable number of clinical, but fewer psychology and pedagogical researches devoted to the problem of rehabilitation of children with cerebral pathology, there have not been elaborated programs of primary school children differentiated follow-up which take into account not only the clinical form of the disease, the level of intellectual development, but also the motor defect severity and sidedness of injury in case of cerebral palsy. Purposeful psycho-correctional interaction of psychologist and children with ICP aimed at the formation and development of thinking activity assumes the compliance with a set of conditions. The first condition is based on the consideration of motor disturbance severity, clinical form and sidedness of injury of elementary-school children with ICP, in this connection it is necessary to equip each child's environment appropriately (special school desks, chairs, fixing of hand-out material on school desks to prevent motor uneasiness), and also observe an individual orthopedic mode and control of a child's adequate position at the lessons.

Taking into account the complicated structure of this pathology development disturbances that concerns not only motor, but also intellectual and speech spheres, the second condition, as we see it, is to carry out the complex differentiated correction-developing work providing simultaneous impact on motor sphere, psychics and speech.

One of the significant conditions is "the formation of adequate reaction to failure" (Belopolskyay, 2008). During psychocorrection, for the purpose of negative reactions prevention, all tasks of the lesson should be presented from simple to difficult ones, there should be provided the change of activities to support child's activity; there should be used controlled assistance according to the individual level of intellectual development of a child with ICP (stimulating, organizing, directing, training). Tasks and exercises included into the content of programs, have to be adequate not only to a child's chronological age, but they are supposed to consider the level of sensory, motor and intellectual development. The same task can be carried out by children with ICP at different levels of self-dependence with different types of assistance at verbal and nonverbal levels.

Muscular tonus disorder should be taken into account in case of cognitive sphere disturbances correction of children with ICP. Pathological hypersthenia with tenseness of pose, insufficient plasticity lead to fast tiredness, disorder of attention and causes fatigue of hands. Therefore, it is necessary in the process of individual or group classes to carry out work to reduce hypersthenia; it has to be done 1-2 times at least.

We have realized the above conditions in the system of special correction-developing lessons. The correction program is designed for 30 lessons: 2 times a week for 2 months and 30 minutes for children with spastic diplegia and hemiparesis (in a group of up to 5 children), 25 minute-

classes for children with cerebral palsy with hyperkinesia (up to 3 children). Lessons have a common structure; they are united by a common goal, interconnected, and assume the observance of accurate consecutive realization of goals for each child's best results achievement. Each lesson in the program contains two variants - for primary schoolchildren with ICP who satisfy age intellectual norm and those with mental retardation.

The basis of the program makes the thought of three directions integration in the correction activity. Let us single out these directions:

- correctional work aimed at the development of thinking activity (motivational, operational and regulatory components).
- correctional work aimed at the development of coherent speech;
- correctional work aimed at the development of fine motor and graphic skills.

The first direction is a "linchpin" in the psychocorrective program. One of its important results is thinking activity activation both in educational and in extracurricular situation with the severity, form and sidedness of motor disturbance in view. The general goal of this direction is specified in the system of tasks: stimulation of children cognitive activity; development of thinking main operations: analysis and synthesis, comparisons, generalizations, abstraction; formation and development of thinking actions; formation of arbitrary regulation and control of own activity.

The inclusion of the second direction in the system of psychocorrective assistance is defined by the importance of coherent speech function in the process of children's school program acquisition, in the process of regulation and control of their behavior, and also efficiency of their social adaptation.

The third direction in psychocorrection activity is also regarded as an important and necessary as the level of graphic skills of patients with infantile cerebral palsy is quite low. Due to the disturbance of manipulative functions of hands and sensory failure, children cannot carry out those tasks which their peers can easily perform.

The lesson structure according to the program is worked out with the following obligatory stages in view:

Motivational. Its purpose is the creation of a favorable atmosphere, children's positive intention to interact and establishment of positive communication motivation, formation of interest in the forthcoming activity (2 minutes).

Preparative. Preparation of manual motoricity for vigorous activity. It includes finger-type, speech and respiratory gymnastics. The important component of this stage is the follow-up of all exercises by social speech at the level of commenting (10 minutes).

Main. At this stage there takes place the development of thinking main operations with the application of different methods and techniques: verbal and nonverbal (schemes, schedules, tables) based on educational and nonacademic material (15 minutes).

Concluding. It is the stage of evaluation and children's self-analysis of their own activity results, their successes and failures. Final positive assessment of a lesson is given by the psychologist (3 minutes).

Defining a primary school child with ICP as an active subject of thinking activity, we have elaborated the system of lessons aimed at stimulating search activity, development of abilities to observe their own actions, persistence to achieve a goal performing the instruction. Activation of primary school children thinking activity is promoted also by tasks in which contradictions clash, by questions demanding establishment of similarity and difference, tasks of the type "Confirm with your own example...", "Prove...", tasks demanding correction of other children's logical, stylistic, factual and other mistakes. Active acquirement of such techniques of

thinking activity opens the possibility for knowledge process self-control and self-government that promotes the development of the ability to think independently.

#### 4. Conclusion

The program corresponds to the requirements of Special federal state standard of general education for children with disabilities. The results of approbation showed that children with hemiparetic form of ICP have noticeable changes at the level of verbal reasoning development, namely: ability to analogy establishment, comparison and generalization of concepts, children began to use logical reasoning more often, to show speech commenting of carried-out actions. In the group of children with spastic diplegia the efficiency of logical operation "comparison" has increased, the quantity of characteristic concerning similarity and differences and also abstract characteristics given by children has grown. In case of hyperkinetic form, there was observed that children had obtained keen understanding of relations existing between more general (generic) and more specific (special) concepts. Considerable decrease in senseless answers testifies to the expansion of general awareness.

Thus, the program provides a primary schoolchild with ICP an opportunity to develop subject activity and optimize child's mental development. The suggested program support of primary schoolchildren with ICP thinking activity development can be used in psychologists' and defectologists' practice in special correction educational institutions.

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